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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 10
1200 Sixth Avenue
Seattle, Washington 98101

IN THE MATTER OF: ENVIRONMENTAL PROTECTION AGENCY, Complainant, v. PACIFIC WOOD TREATING CORP., EPA ID. No. WAD009036906, Respondent.	No. 1085-09-26-3008P AFFIDAVIT OF FREDERICK WOLF

FREDERICK WOLF, having been duly sworn on oath, does depose and say:

1. I am an employee of the Environmental Protection Agency ("EPA") Region 10, located in Seattle, Washington. My position with EPA is Environmental Scientist (Hydrogeologist). I am a Certified Professional Geological Scientist (Number 6068) by the American Institute of Professional Geologists and a Registered Professional Geologist (Number AA0057) by the State of Alaska. I hold a Bachelor of Science degree in Geology and a Master of Science degree in Environmental Health Science and Water Resources Engineering. I have ten years of post-degree professional experience, all of which involves hazardous waste groundwater issues. Eight years of my

experience has been with EPA, having had assignments in Atlanta, Boston, and Seattle. I am the author of twenty published documents and technical papers involving groundwater contamination.

2. I became involved in the review of Pacific Wood Treating closure plan for Ridgefield Brick and Tile site (hereinafter "RBT site"), Ridgefield, Washington, during the fall of 1985. My review consisted of careful consideration and assessment of the Draft Closure Plan for Ridgefield Brick and Tile Site, Ridgefield, Washington, July 15, 1983, prepared by Sweet, Edwards and Associates in association with Patrick H. Wicks, P.E., and the Report on Certification of Closure of the Ridgefield Brick and Tile Site, February 15, 1984, prepared by Patrick H. Wicks, P.E., in association with Sweet, Edwards and Associates, Inc. I have also had conversations with ~~Marsha~~ Marcia Bailey and Robert Stamnes, who are familiar with the site. I have not personally visited this facility.

3. According to my understanding of these documents and conversations, three lysimeters were installed at the facility. Monitoring of these lysimeters and four private production wells constitute the groundwater monitoring effort at this site. Upon my review, I concluded that such a system can in no way meet the requirements of 40 C.F.R, Part 265, Subpart F, and that the system is totally inappropriate environmentally, for the purpose of groundwater monitoring, for a facility like the RBT site.

4. Regulations governing groundwater monitoring for facilities regulated under the Resource Conservation and Recovery Act of 1976, as amended, are found at 40 C.F.R., Part 265, Subpart F. The essence of this

subpart is that unless a facility can adequately demonstrate that there is a low potential for migration of hazardous waste or hazardous waste constituents from the facility via the uppermost aquifer to water supply wells (domestic, industrial, or agricultural) or to subsurface water, groundwater monitoring, by means of wells, is mandated. This mandate is stated in 40 C.F.R. §265.91. This section further defines an appropriate groundwater monitoring system as one that must be capable of yielding groundwater samples for analysis, and that this system must consist of an unspecified, but no fewer than, four wells. These monitoring wells are to be constructed in accordance with the regulations elaborated in Section 265.91(c), which states:

> All monitoring wells must be cased in a manner that maintains the integrity of the monitoring well borehole. This casing must be screened or perforated and packaged with gravel or sand where necessary, to enable sample collection at depths where appropriate aquifer flow zones exist...

40 C.F.R. §265.92 sets further qualifications as to the appropriate performance of monitoring wells suitable for RCRA interim status monitoring. Specifically, quarterly samples of groundwater from monitoring wells must be obtained for all wells and:

> For all monitoring wells, the owner or

operator must establish initial background concentrations of all parameters specified in paragraph (b) of this section. He must do this quarterly for one year.

Furthermore:

Elevations of the groundwater surface at each monitoring well must be determined each time a sample is obtained.

5. From my review of the aforementioned documents, it is obvious that the current system at the RBT site meets none of the above requirements. These conclusions are further explained later in this affidavit.

6. In addition to the aforementioned documents, I have had an opportunity to read and review the Motion for Accelerated Decision, including Mr. Patrick Wicks' Affidavit. On reading Mr. Wicks' Affidavit, I became aware that a fourth lysimeter was installed in September 1983. Mr. Wicks defines a lysimeter as a device used for collecting groundwater samples from shallow depths. The lysimeter relies on a vacuum to cause "any water present near the lysimeter to be drawn through the porous ceramic cup into the lysimeter" which "can then be brought to the surface by placing air pressure on one of the small lysimeter tubes and collecting the samples from the other tube."

It is the experience of many scientists and engineers, including myself, that lysimeters can not be substituted for properly constructed monitoring wells. The reasons for this are as follows: Lysimeters are devices principally used for obtaining water from the "unsaturated zone,"

which is the position of the soil column located above the groundwater table. In many locations, this zone has some moisture content associated with rainfall, human activities, vegetation and a host of other factors, but is not saturated, thus making a well unfeasible for sampling moisture content. Lysimeters, as a practical matter, often fail due to the clogging effect of fine grained soils on the porous ceramic cup. These devices can not yield an accurate water table elevation as required by regulations. The manner of producing samples employed by a lysimeter is totally inappropriate for groundwater sampling as required by Part 265. Since the sample of soil water is subjected to a vacuum and pressurized air, there is a high probability that dissolved constituents such as iron and sulfate would be affected by shifts in dissolved gases resulting from varying partial pressures. Furthermore, pH and total organic halogen would also be affected by the operation of a lysimeter as described by Mr. Wicks. EPA, as a matter of policy, does not accept lysimeters as a valid substitute for properly constructed monitoring wells. The regulations specify that monitoring wells are mandatory for proper groundwater monitoring. Lysimeters can not be constructed which can fulfill the requirement of Section 265, Subpart F. In addition, lysimeters are not generally reliable, and are inappropriate for the RBT site.

7. Domestic wells are also unsuitable for groundwater monitoring. These wells are not designed for monitoring. Instead they are designed to produce water for human supply efficiently. These wells typically do not have access parts for water table elevation measurements, and water samples usually have to be obtained from household fixtures such as taps. Therefore, representative samples of groundwater can not be obtained from water supply wells. There are very specific scientific

protocols for sampling groundwater. Domestic wells are not adequately constructed or configured for monitoring purposes. Domestic well screens are typically not of proper length for groundwater monitoring, nor are the materials of which they are constructed satisfactory for this purpose. Certainly, domestic wells are not in accordance with Part 265 standards, nor are they appropriate for obtaining reliable samples from aquifers.

8. Mr. Wicks states that "in several respects the groundwater monitoring system is superior to the 40 C.F.R. Part 265 monitoring requirements." Mr. Wicks concludes that the monitoring system installed at RBT will detect contamination potential prior to the occurrence of groundwater contamination. Further he states that the system at the RBT site monitors the quality of the local drinking water supply, which would not be accomplished by a 40 C.F.R. §265 monitoring system.

While I agree that elements of this existing monitoring system can provide useful data concerning environmental quality and site impact potential, the information they provide is simply incomplete. The existing system falls for short of the requirements described in 40 C.F.R. Section 265, Subpart F, and is generally inappropriate, in an environmental sense, for the RBT site.

While assuring that groundwater can be properly monitored, wells constructed in accordance with Part 265, Subpart F also demonstrate that past releases (i.e., releases which occurred prior to the installation of the clay layers and lysimeters) into the upper aquifer are adequately assessed. Such historical releases by facilities are frequently the major source of contamination to groundwater. Because of the potential for very

slow rates of migration through the subsurface, this potential at the RBT site represents an insidious threat to public health and the environment which can only be identified by installation of monitoring wells.

Mr. Wicks also states that:

> Monitoring of the toedrain provides a direct and rapid indication of the potential for contaminants in leachate from the new waste encapsulation area to migrate to groundwater or to surface water at the site.

I agree that toedrain monitoring is of real value in determining the potential impact of a leachate, but I can not extrapolate this conclusion into the statement Mr. Wicks has made concerning potential for migration to groundwater or surface water at the site. By this, I mean that many other factors could or did lead to the migration of contaminants from the RBT site to surface or groundwater, which were not or are not detected by the toedrain system.

Mr. Wicks also states that:

> Monitoring of nearby drinking water supply wells provides an indication of whether local drinking water is being contaminated.

I agree with this conclusion. However, such wells, should they become contaminated represent a serious threat to public health. For this reason, I do not concur that these wells represent an acceptable alternative to 40 C.F.R. §265 monitoring wells, or are appropriate, in an environmental sense, for the RBT site. The intent of groundwater monitoring is to detect contamination before domestic or public supply wells are impacted, thus

resulting in a threat to public health, and the environment. While, monitoring local domestic wells that are not abandoned is an act of altruism, such monitoring can in no way sufficiently compensate for the lack of proper monitoring wells.

DATED this 20 day of June, 1986.

FREDERICK WOLF

SUBSCRIBED and SWORN to me this 20th day of June, 1986.

Notary Public in and for the State of Washington, residing at Seattle